Application Development/CASE

AD- 1

INPUT

Notes

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Systems Development Issues

- Backlogs
- Productivity—costs/elapsed time
- Quality
- Capturing business requirements

INPUT

Notes

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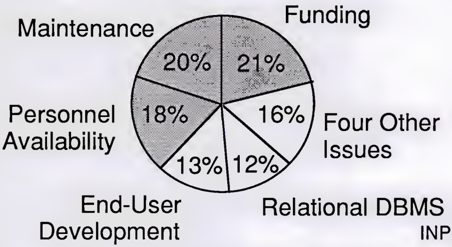
Most Important Systems Development Issues



INPUT

Notes

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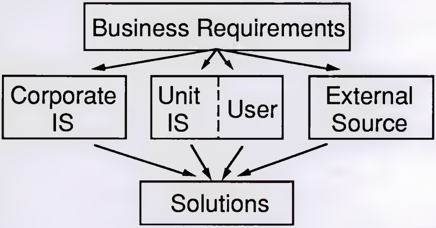
Development Environment


Business Requirements

Corporate IS

Unit IS

User

External Source

Solutions

INPUT

Notes

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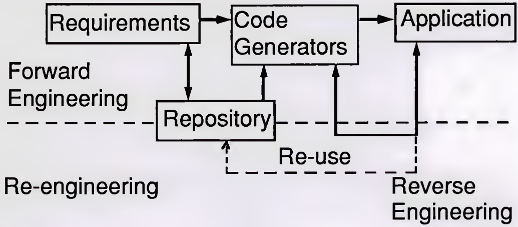
CASE Components



Requirements

Code Generators

Application

Forward Engineering

Repository

Re-use

Re-engineering

Reverse Engineering

INPUT

Notes

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CASE Market Forecast Factors

INPUT

Notes

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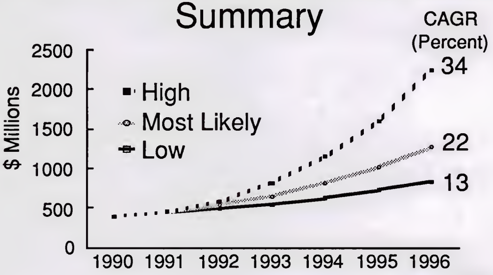
CASE Product Growth Scenarios Summary



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AD- 7

Notes

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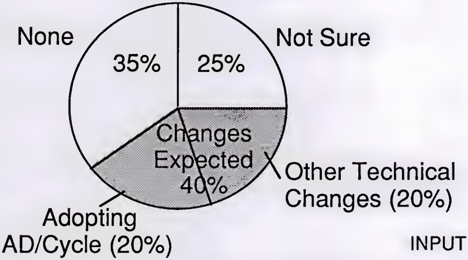
Expected Changes in CASE Plans



INPUT

Notes

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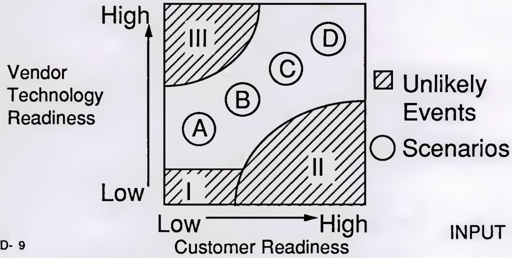
Near-Term (1991-1993) CASE Scenarios



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Notes

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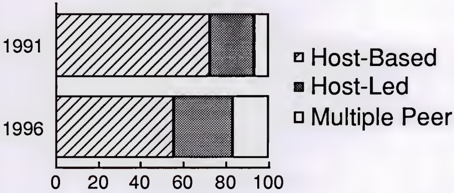
Target Environments
1991 and 1996



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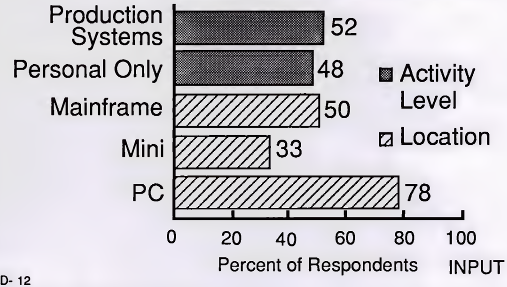
Notes

Development by the End User



Notes

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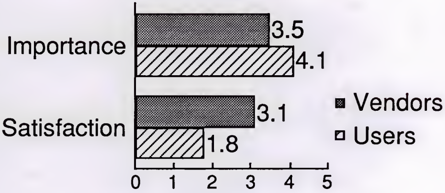
CASE Standards



INPUT

Notes

U.S. CASE Standards Probabilities (To 1996)

AD/Cycle standard	High
Formal standards	Medium/Low
Other de facto standards	
• IBM environment	Low
• Other environments	Medium/Low
Cross-platform standards	Medium

INPUT

AD- 14

Notes

6/14/91

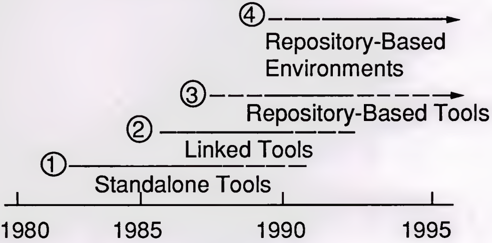
CASE Acceptance Issues

AD- 15

INPUT

Notes

CASE Stages



④ Repository-Based Environments

③ Repository-Based Tools

② Linked Tools

① Standalone Tools

1980 1985 1990 1995

INPUT

AD- 16

Notes

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CASE "Prehistory": 1985-1988

- Non-integrated products
- Barriers to entry
  - Front-end: Low
  - Back-end: Medium
  - Re-engineering: Medium/high
- 140 vendors, mostly small

INPUT

AD- 17

Notes

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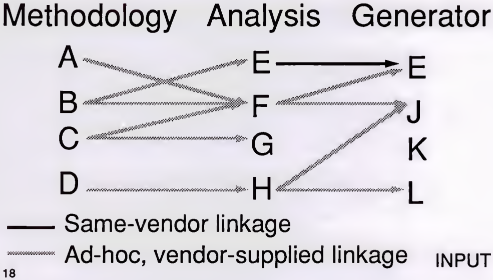
Linked Tools



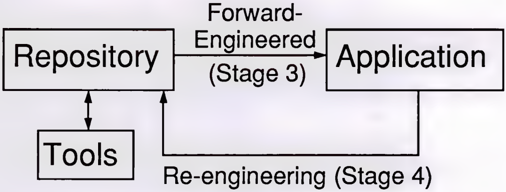
—— Same-vendor linkage

▨ Ad-hoc, vendor-supplied linkage

INPUT

Notes

Repository-Based CASE



Forward-Engineered (Stage 3)

Repository

Application

Tools

Re-engineering (Stage 4)

INPUT

Notes

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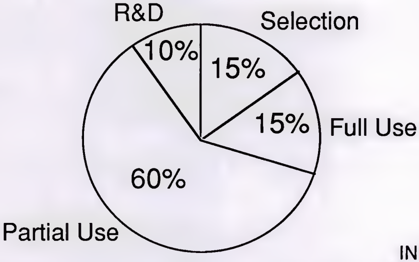
1991 CASE Use



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Notes

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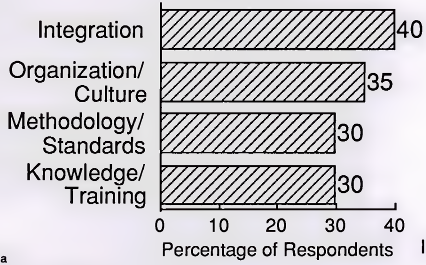
CASE Problems/Unresolved Issues



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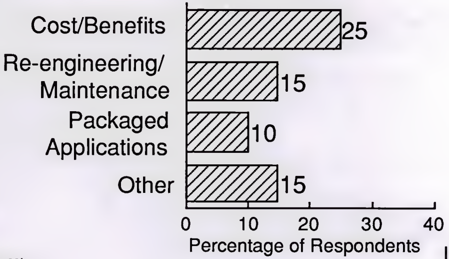
AD- 23a

Notes

6/14/91

CASE Problems/Unresolved Issues



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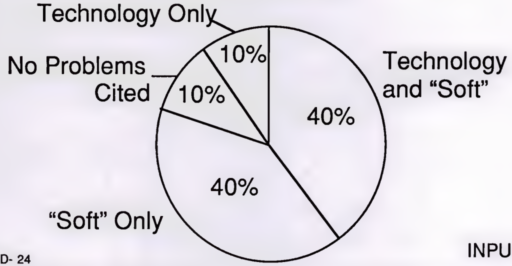
AD- 23b

Notes

Technology vs. "Soft" CASE Problems



INPUT

Notes

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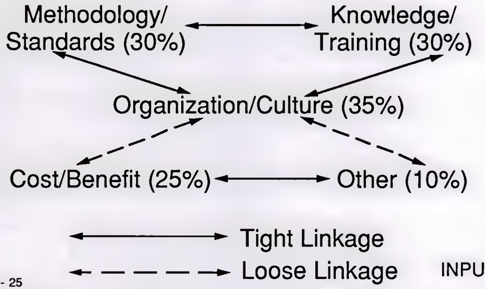
"Soft" Issues—Relationships



Methodology/
Standards (30%)

Knowledge/
Training (30%)

Organization/Culture (35%)

Cost/Benefit (25%)

Other (10%)

Tight Linkage

Loose Linkage

INPUT

Notes

Organizational Readiness

- Cultural/organizational readiness
- Development methodology
- Measurement
- CASE planning

INPUT

Notes

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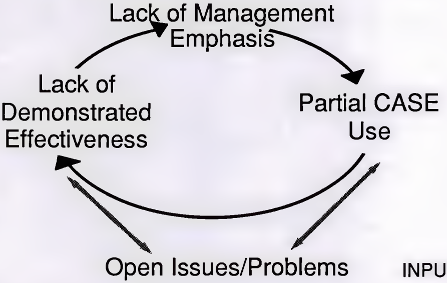
CASE's Vicious Circle



Lack of Management Emphasis

Partial CASE Use

Open Issues/Problems

Lack of Demonstrated Effectiveness

AD- 28

INPUT

Notes

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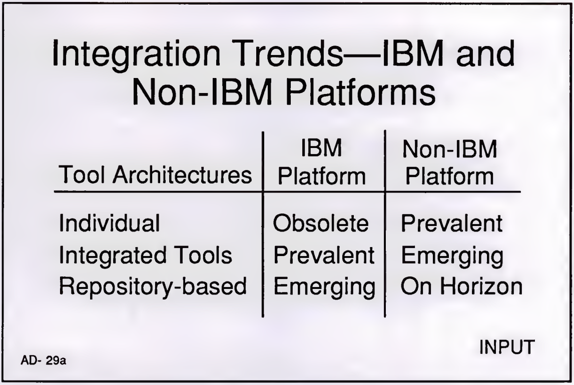

Integration Trends—IBM and Non-IBM Platforms

Tool Architectures	IBM Platform	Non-IBM Platform
Individual	Obsolete	Prevalent
Integrated Tools	Prevalent	Emerging
Repository-based	Emerging	On Horizon

AD- 29a

INPUT

Notes

Integration Trends—IBM and Non-IBM Platforms

Tool Standards	IBM Platform	Non-IBM Platform
AD/Cycle	De Facto	Possible
Other Platform-Specific	Under Pressure	Prevalent

AD- 29b

INPUT

Notes

Integration Trends—IBM and Non-IBM Platforms

Tool Standards	IBM Platform	Non-IBM Platform
Cross-Platform	Unclear	Possible
Methodologies	AD/Cycle-Driven	Mixed Trends

INPUT

AD- 29c

Notes

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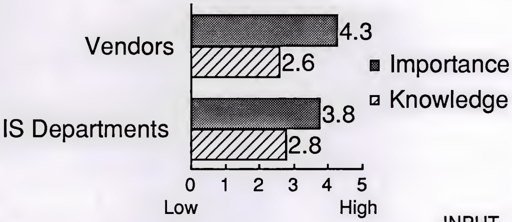
Understanding Reasons for CASE Success



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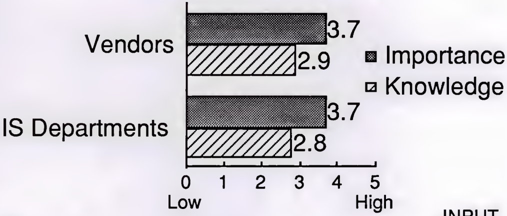
Notes

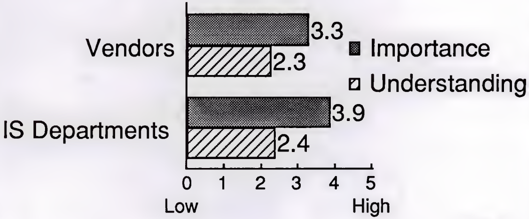
Impact of CASE Technology on Applications Design



INPUT

Notes

CASE Impact on End-User Departments



INPUT

Notes

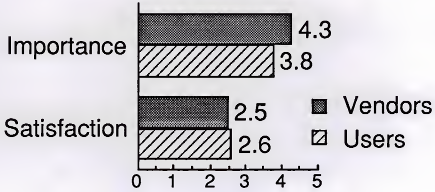
Re-engineering Options

Factor	Reverse-eng. Application	Re-used Application
Platforms	Unchanged	Changed
Host/workstation	Unchanged	Changed
Linkage applications	Loose	Tight
End-user involvement	Moderate	Intensive
Repository experience	Low	High

INPUT

Notes

Re-engineering



INPUT

Notes

CASE Competitive Environment

INPUT

Notes

Leading CASE Vendors

- KnowledgeWare
- Texas Instruments
- Andersen Consulting
- Oracle
- CGI
- DEC

- Intersolv
- Cadre
- Pansophic
- Synon
- Viasoft

INPUT

Notes

CASE Combinations

- Pansophic/Christiansen
- Cadre/Microcase
- Sage/Visual Systems, Inc.
- Sage/Polytron
- Nastec/TIP

INPUT

AD- 37a

Notes

6/14/91

CASE Combinations

- Nastec/Transform Logic
- CGI (Transform Logic Products)
- Intersolv (Index Technology and Sage Software)

INPUT

AD-37b

Notes

6/14/91

CASE Combinations

- XA Systems/Peat Marwick Advanced Technology Division
- IBM/Transform Logic (Technology Transfer)
- Texas Instruments/James Martin Associates (Technology Transfer)

Notes

Positioning: Selected Vendors

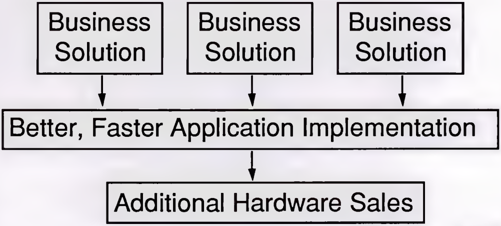
	AD/Cycle	DEC	UNIX
KnowledgeWare	X		
Intersolv	X		X
TI	X	X	X
Andersen	X	X	
ORACLE	X	X	X

INPUT

Notes

6/14/91

IBM Solution-Directed Strategy



Business Solution

Business Solution

Business Solution

Better, Faster Application Implementation

Additional Hardware Sales

INPUT

AD- 40

Notes

6/14/91

CASE Support of IBM's Business Objectives

Strategic CASE Elements	Account Control	Hardware Sales
CASE-based applications solutions	H	H
Co-option of third parties	H	M/H
Rapid development	M/L	H

INPUT

AD- 41a

Notes

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CASE Support of IBM's Business Objectives

Strategic CASE Elements	Account Control	Hardware Sales
Proprietary CASE environment	H	L
Provision of CASE product options	M/H	M

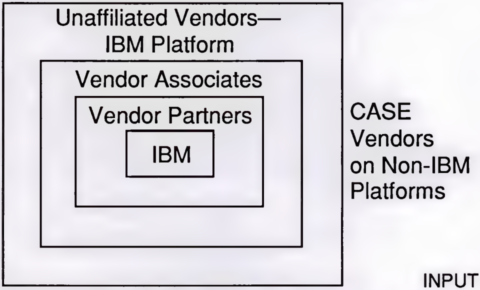
AD-41b

INPUT

Notes

6/14/91

New AD/Cycle Universe



Unaffiliated Vendors—IBM Platform

Vendor Associates

Vendor Partners

IBM

CASE Vendors on Non-IBM Platforms

INPUT

AD- 42

Notes

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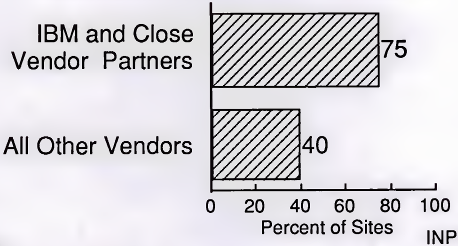
AD/Cycle's Market Share Current CASE Products



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AD- 43a

Notes

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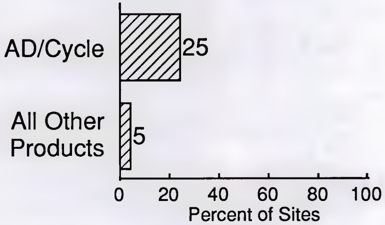
AD/Cycle's Market Share Planned CASE Products



INPUT

AD- 43b

Notes

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IBM CASE Equity Partners

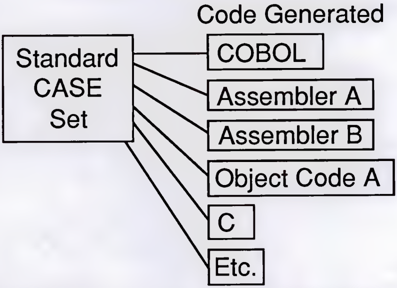
- KnowledgeWare
- Index Technologies
- Synon
- Bachman Information Systems
- Systematica
- Easel Corporation

INPUT

AD- 44

Notes

Hardware Impact



Code Generated

Standard CASE Set

COBOL

Assembler A

Assembler B

Object Code A

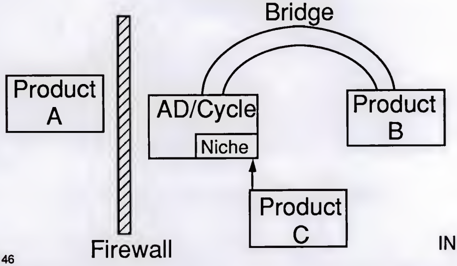
C

Etc.

INPUT

Notes

AD/Cycle CASE Vendor Options



Bridge

Product A

AD/Cycle

Niche

Product B

Product C

Firewall

INPUT

Notes

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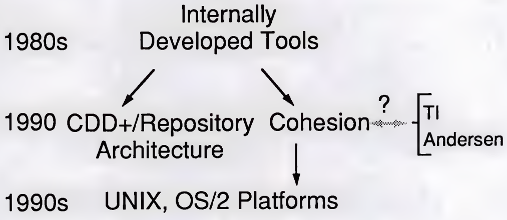
DEC's Overlapping Strategies



1980s Internally Developed Tools

1990 CDD+/Repository Architecture

1990 Cohesion ? TI, Andersen

1990s UNIX, OS/2 Platforms

INPUT

Notes

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General Impact/Implications

INPUT

Notes

"Obvious" CASE Impact

- Better
- Faster
- Cheaper

INPUT

Notes

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CASE Impact

- Vendors, customers
- Multiple areas
  - Conduct of work
  - Organizational structure
  - Future role of organization
  - Business strategy

INPUT

Notes

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Potentially, Biggest Impact Since System/360

- Repositioning of information systems departments within the corporation
- Rearrangement of vendors, products and strategies

INPUT

AD- 51

Notes

6/14/91

Potentially, Biggest Impact Since System/360

- New way of looking at software and applications development
- Standardization, paying the price of complexity and, probably, IBM dominance

INPUT

Notes

Summary of Conclusions

- CASE promises, not delivery
- Major barriers
  - Integration and readiness
- Significant re-engineering progress
- Distributed applications: limited progress
- AD/Cycle

INPUT

AD-53

Notes

Unresolved CASE Technical Issues

- Integration (still emerging)
- Distributed systems—target platform (1995?)
  - Data base
  - Processing modes

INPUT

Notes

6/14/91

Unresolved CASE Technical Issues

- Multiple vendor hardware platforms
- Real-time linkage
  - Methodologies
  - Integration with business IS model

INPUT

Notes

Unresolved CASE Business Issues

- Importance of CASE tools vs. tool users
- End-user involvement with CASE?
- CASE product survivors
- Commitment to CASE

INPUT

AD-56

Notes

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Unresolved CASE Business Issues

- Level of knowledge
- How is CASE success defined?
- Preconditions for successful implementation

INPUT

Notes

CASE Impacts on Vendors

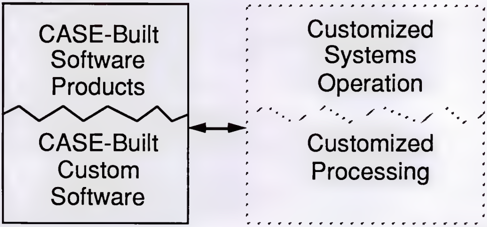
INPUT

AD-58

Notes

6/14/91

Business System Solutions



CASE-Built Software Products

CASE-Built Custom Software

Customized Systems Operation

Customized Processing

INPUT

Notes

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Applications Software Products Impact

- Build (rebuild) using standard CASE tools
- Potentially, continuum of totally *standard* to totally customized applications

INPUT

AD- 60

Notes

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Applications Software Products Impact

- Customizing wide open
  - Software vendor
  - Systems integrator (may be identical)
  - In-house

INPUT

Notes

[illegible]

Product Issues for Applications Software Vendors

Positive	Negative
• Quality	• Technical risk
• Timeliness	• Time and dollar resources
• Flexibility	• Dual product support

INPUT

AD- 62

Notes

6/14/91

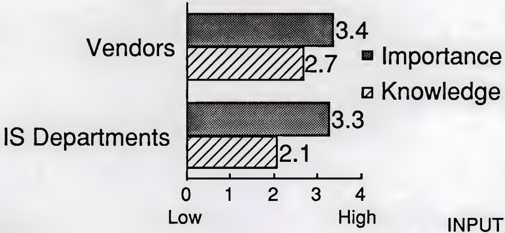
Acceptance Issues for Applications Software Vendors

Positive	Negative
Higher quality	Acceptance rate
Tailoring capabilities	Integration plans
Tie-in to customer CASE planning	Too early/late

INPUT

Notes

Impact of CASE on Other Software Product Vendors



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Notes

Impact on Systems Integration

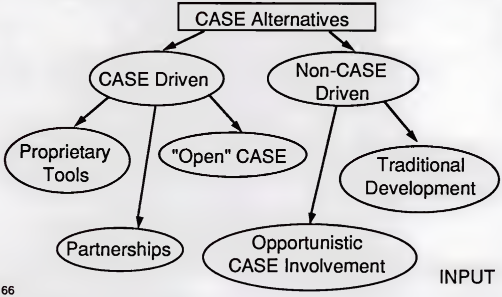
INPUT

AD- 65

Notes

6/14/91

Professional Services/SI Firms



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AD- 66

Notes

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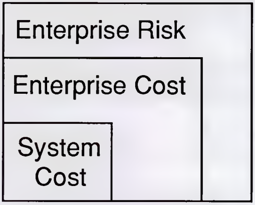
System-Related Costs versus All Costs



Enterprise Risk

Enterprise Cost

System Cost

AD- 67

INPUT

Notes

System Integrators' Success: Timing is Critical

- Assessing point of no return with AD/Cycle
- Picking winning technical partner(s)
- Building up internal skills
- Dropping non-CASE business
- Selecting niches

INPUT

Notes

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Systems Integrators: Apply Rather Than Invent Technology

- Potential to improve implementation effectiveness markedly
- Leverage functional and vertical expertise
- Build up "object libraries" in functional/vertical markets

INPUT

AD-70

Notes

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Successful Systems Integrators May Look More Like Business Consultants

- Identify business solutions and resulting systems
- Mold systems to organizational culture
- Build consensus for solutions
- Place system cost in context

INPUT

AD- 71

Notes

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"Insourcing": Potential Competition

- CASE offers chance to overcome in-house development inadequacies
- In-house staff can understand:
  - Enterprise
  - Industry
  - Business issues

AD-72

INPUT

Notes

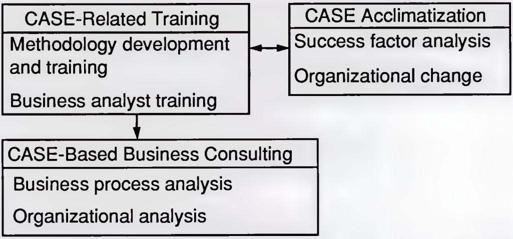
Opportunity: Re-engineering Applications

- Build up expertise in reverse engineering skills
- Add application knowledge
- Re-engineering vs. maintenance

INPUT

Notes

CASE-Related Services



CASE-Related Training
- Methodology development and training
- Business analyst training

CASE Acclimatization
- Success factor analysis
- Organizational change

CASE-Based Business Consulting
- Business process analysis
- Organizational analysis

INPUT

Notes

Less Differentiation for Systems Integrators?

- Tools reduce skill gaps:
  - In-house vs. vendor
  - Vendor A vs. vendor B
- CASE drives product selection

INPUT

AD-69

Notes

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CASE "Front End" Activities

- Varying names (information engineering, re-engineering, process re-engineering, business systems analysis)

INPUT

AD- 75

Notes

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CASE "Front End" Activities

- Often interwoven with other services
    - SI
    - CASE
    - Traditional requirements/design

INPUT

Notes

CASE "Front End" Service Suppliers

- Big 6
- Management consultants
- Professional services firms
- Specialist consultants
- Systems integrators

INPUT

AD- 77

Notes

7/30/91

CASE Capabilities

Target Platform	New Development	Maintenance
Host-Led (Mainframe/Mini)	Medium	Medium/Low
Client/Server	Low	Very Low
PC/Workstation (Standalone)	Medium/Low	Very Low

AD-87

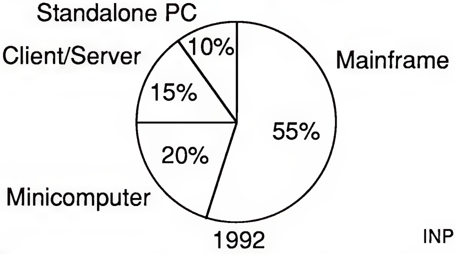
INPUT

Notes

Source: INPUT Assessment

5/19/93

Target Platform for New Mission-Critical Applications



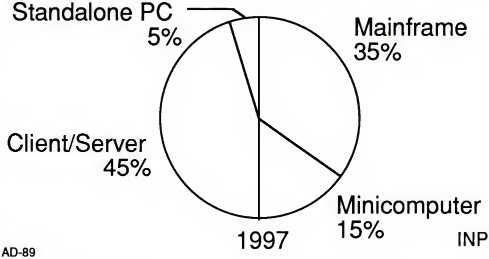
INPUT

Notes

Source: INPUT Estimates

5/19/93

Target Platform for New Mission-Critical Applications



INPUT

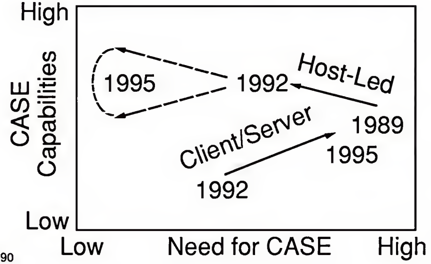
AD-89

Notes

Source: INPUT Estimates

5/19/93

CASE Need and Capabilities by Platform



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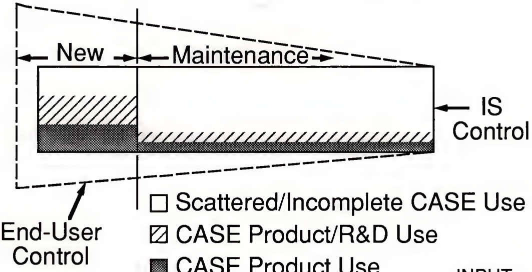
AD-90

Notes

Source: INPUT Assessments

5/19/93

“Net” CASE Product Use



New

Maintenance

IS Control

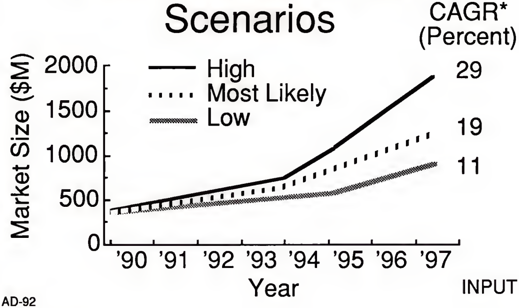
End-User Control

- □ Scattered/Incomplete CASE Use
- ▨ CASE Product/R&D Use
- ■ CASE Product Use

INPUT

Notes

CASE Product Growth Scenarios



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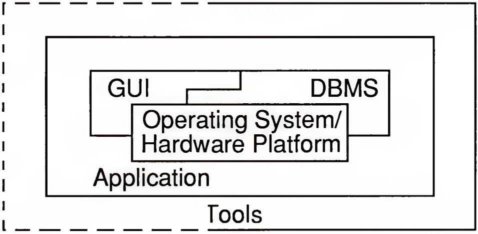
AD-92

Notes

*CAGR: 1992-1997

Client/Server Tools As an Encapsulator



GUI

DBMS

Operating System/
Hardware Platform

Application

Tools

INPUT

Notes

5/19/93

"CASE-Enriched" Products and Services

"CASE-Enriched" Product/Service	Need In:	
	IS	User
Client/Server Planning	High	Medium
Needs Analysis	Medium	High
SW Product Eval.	High	High
Systems Software	High	Medium

AD-94

INPUT

Notes

5/19/93

"CASE-Enriched" Products and Services

"CASE-Enriched" Product/Service	Need In:	
	IS	User
Applications SW	Medium/High	Very High
Software Support	Medium/High	High
Application Impl.	Medium	High
Systems Integration	Medium	High

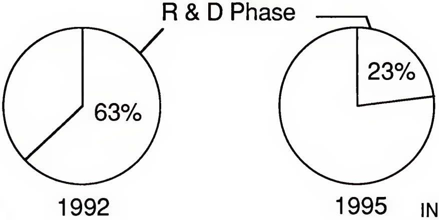
AD-95

INPUT

Notes

5/19/93

Proportion of "A" Product Customers in R&D Phase



AD-96

INPUT

Notes

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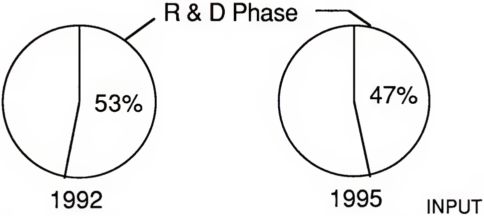
Proportion of "B" Product Customers in R&D Phase



INPUT

AD-97

Notes

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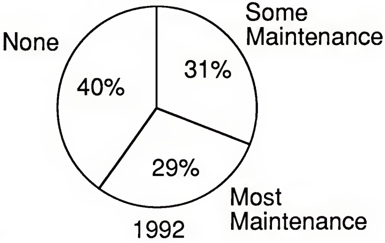
Extent of Use of "A" Products for Maintenance



INPUT

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Notes

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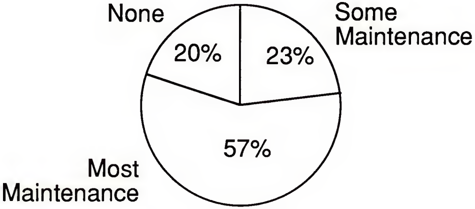
Extent of Use of "A" Products for Maintenance



1995

INPUT

AD-99

Notes

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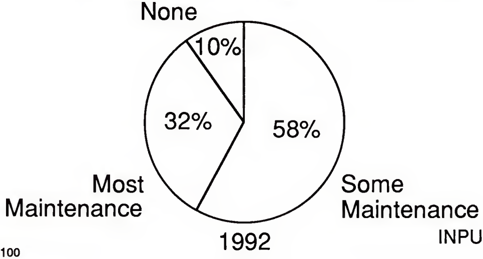
Extent of Use of “B” Products for Maintenance

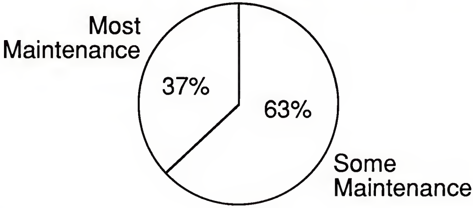


INPUT

AD-100

Notes

Extent of Use of “B” Products for Maintenance



1995

AD-101

INPUT

Notes

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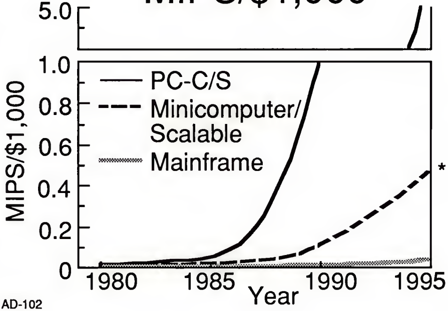
MIPS/$1,000



INPUT

AD-102

Notes

*Includes scalable processors, e.g., NCR 3000 series.

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Selected Client/Server Operating Environments

Platform	Vendor
Macintosh	Apple
OS/2	IBM
NT	Microsoft
Windows	Microsoft

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INPUT

Notes

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Selected Client/Server Operating Environments

Platform	Vendor
Object Management Architecture (OMA)	Object Management Group
"Pink"	Taligent (IBM/Apple)
UNIX	Various

AD-104

INPUT

Notes

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Selected Client/Server Data Base Servers

Server	Vendor
Ingres	ASK
Rdb	DEC
SQL Server	Gupta
All base	HP

INPUT

AD-105

Notes

Selected Client/Server Data Base Servers

Server	Vendor
DB2	IBM
Informix	Informix
Oracle	Oracle
Sybase	Sybase

AD-106

INPUT

Notes

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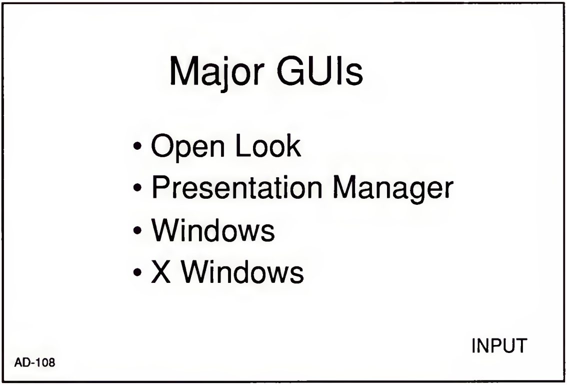
Major GUIs

- DECWindows
- Macintosh
- Motif
- NewWave
- Next

INPUT

Notes



Major GUIs

- Open Look
- Presentation Manager
- Windows
- X Windows

INPUT

Notes

Client/Server Tool Snapshot

Tool	Vendor	Focus
Ellipse	Cooperative Solutions	Transaction Processing
Easel	Easel	GUI/DB
SQL	Gupta	DB-oriented

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INPUT

Notes

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Client/Server Tool Snapshot

Tool	Vendor	Focus
Viewpoint	Knowledge Ware	GUI/DB
SQL Server	Microsoft	DB/Transaction
Mozart	Mozart Systems	GUI
Powerbuilder	Powersoft	DB-oriented

AD-110

INPUT

Notes

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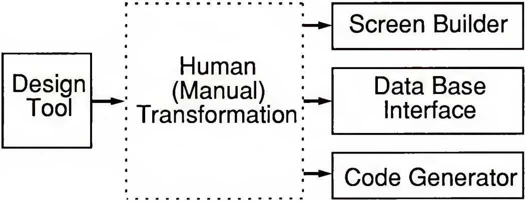
Client/Server: "Interim CASE"



Design Tool

Human (Manual) Transformation

Screen Builder

Data Base Interface

Code Generator

INPUT

AD-111

Notes

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"Grades" for Host-Led and Client/Server Environments

	User Preference		Platform Capabilities	
Environment	1992	1995	1992	1995
Host-Led	C	C-	B	C-
Client/Server	B	A	C	A

A= Excellent, F = Fail

INPUT

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Notes

"Grades" for Host-Led and Client/Server Environments

	Platform Stability		SW Eng. Support	
Environment	1992	1995	1992	1995
Host-Led	B+	B	C	B to D
Client/Server	C-	B	D-	C to D

A= Excellent, F = Fail

INPUT

Notes

Host-Led CASE Organizational Readiness Factors

Factor		1995	
	1991	Likely	Best
Culture/Organization Changes	C-	C	C
Methodologies	C	C	C+

A= Excellent, F = Fail

INPUT

AD-114

Notes

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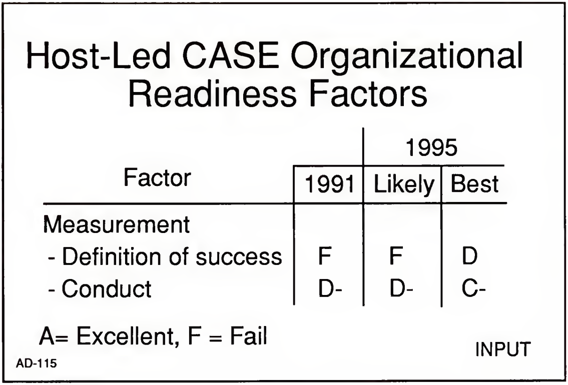

Host-Led CASE Organizational Readiness Factors

Factor		1995	
	1991	Likely	Best
Measurement			
- Definition of success	F	F	D
- Conduct	D-	D-	C-

A= Excellent, F = Fail

INPUT

Notes

Host-Led CASE Organizational Readiness Factors

Factor	1991	1995 Likely	1995 Best
Implementation			
- Understand success factors	D	C-	B-
- Plan	C-	D	C
- Apply success factors	D	C-	C

A= Excellent, F = Fail

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INPUT

Notes

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Host-Led CASE Organizational Readiness Factors

Factor	1991	1995	
		Likely	Best
IS-User Relationships	C-	C-	C+
Train			
- Understand needs	C-	C	C+
- Develop	D	D	C-

A= Excellent, F = Fail

INPUT

Notes

CASE Acceptance Variables

Factor	Deg. of Variability	Issues/Comments
Decline of host-led development	Narrow	• Trend is strong; current CASE orientation

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INPUT

Notes

CASE Acceptance Variables

Factor	Deg. of Variability	Issues/Comments
Lack of C/S SW engineering methodologies	Wide	• Successful and accepted concepts could drive C/S CASE

INPUT

AD-119

Notes

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CASE Acceptance Variables

Factor	Deg. of Variability	Issues/Comments
Lack of C/S CASE products	Medium	• Medium-term directions clear • Long-term depends on methodologies

AD-120

INPUT

Notes

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CASE Acceptance Variables

Factor	Deg. of Variability	Issues/Comments
Uncertainties of underlying C/S technology	Medium	• Software robustness • DB control • Competing standards

AD-121

INPUT

Notes

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CASE Acceptance Variables

Factor	Deg. of Variability	Issues/Comments
Organizational readiness	Wide	• Will end users be more willing and able to use CASE?

AD-122

INPUT

Notes

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Downsized Development Environments

	Application Developers			
Target Environment	Power User	SI Vendor	Central. IS	Decentral. IS
Host-Led		XX	XX	X
Client/Server	XX	XX	X	XX
PC/Workstation	XX	X		XX

XX = Very Important, X = Important

INPUT

AD-123

Notes